

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-19 are pending, with claims 14-17 amended by the present amendment. Claims 1, 14 and 18 are independent.

In the Official Action, the specification was objected to; claim 14 and 18-19 were rejected under 35 U.S.C. § 112, first paragraph; claims 1-2, 4-16 and 18-19 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Mahy (U.S. Patent No. 5,872,898), Van de Capelle (U.S. Patent No. 7,123,380), Ito (U.S. Patent No. 6,801,339) and Dalal (U.S. Patent No. 5,892,891); and claims 3 and 17 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Mahy, Van de Capelle, Ito, Dalal and Ebner (U.S. Patent No. 5,689,344).

Applicant acknowledges with appreciation the telephone discussions between Applicant's representative, the Examiner and the Examiner's supervisor on October 16, 2008 regarding the rejection of claims 18-19 under 35 U.S.C. § 112, first paragraph. During the discussion, the supervisor indicated that a citation to the specification for the features in question would overcome this rejection.

Applicant traverses the rejection of claims 18-19 under 35 U.S.C. § 112, first paragraph, in view of the fact that paragraph [056] of Applicant's specification describes a computer program (a.k.a. product) embodied on at least one computer-readable medium. Thus, claims 18-19 are compliant under 35 U.S.C. § 112, first paragraph.

The specification is amended in response to the current objection. Paragraph [056] is also amended in compliance with 35 U.S.C. § 101. No new matter is added.

Claims 14-17 are amended in response to the rejection under 35 U.S.C. § 112, first paragraph. Support for this amendment is found in Applicant's originally filed specification.¹ No new matter is added. Thus, the rejection of claim 14 is overcome.

Briefly recapitulating, claim 1 is directed to

A method of rendering colours in a printing system using a set of N colorants, including, for each colour to be rendered, a selection of a subset of M colorants whereby $M < N$ and for each colorant of said subset, a selection of a halftone screen among a plurality of available halftone screens and a coverage fraction, the method comprising steps:

defining discrete colour points in at least a portion of a colour space;

determining for the defined discrete colour points, *different subsets of colorants and associated coverage fractions thereof*, rendering each of said colour points, and calculating for each of said subsets an associated graininess value;

determining lists of colorant subsets rendering the defined discrete colour points, said lists being consistent with respect to the attribution of a halftone screen to a colorant within a subset over said portion of the colour space; and

selecting one of said lists of subsets of colorants on the basis of a total graininess calculated for said lists.

Mahy describes a method and an apparatus for obtaining a gamut description of a multidimensional color reproduction device. The method is based on the transformation of several types of colorants boundaries that map to the boundaries of the color gamut of the device in color space. The Official Action asserts that Mahy (col. 11, lines 36-44 and col. 12, lines 36-67, and col. 13, line 61 – col. 14, line 12) discloses Applicant's claimed step of "determining for the defined discrete colour points, different subsets of colorants and associated coverage fractions thereof." Applicant traverses.

¹ Specification, paragraph [035] and [056]

First, Applicant notes that col. 10, line 5 of Mahy describes that “It is possible to indicate that, assuming that a color can be rendered by only one set of colorants, the physical boundaries indeed correspond to boundaries in color space. This is demonstrated by means of FIGS. 3 and 4. For a point A inside the colorant gamut, there exists a corresponding point A' in color space.” Thus, Mahy limits a color (color point) to one set of colorants, and does not determine different subsets of colorants for defined discrete color points.

Second, cited col. 11, lines 36-44, of Mahy only describes that that for every couple, a set of two values can be found that meet a particular equation. If these two values of are real and at least one of the two colorant combinations belongs to the colorant gamut, the corresponding color belongs to such a natural boundary. The sets of two solutions that correspond to couples form two natural boundary surfaces. FIG. 5 of Mahy shows two natural boundary surfaces of the process of which the Neugebauer primaries are given in Table 1 of Mahy. However, the quadratic equation parameters associated with the color boundary determination of Mahy are not related to determining for the defined discrete colour points, different subsets of colorants and associated coverage fractions thereof. Cited col. 12, lines 36-67, of Mahy also does not describe determining for the defined discrete colour points, different subsets of colorants and associated coverage fractions thereof.

Third, cited col. 13, line 61 – col. 14, line 12 of Mahy describes that in the case of an n-ink process with $n > 4$, natural and hybrid boundary types also have to be considered. However, Mahy further notes that in practice it is safe to take into account only the physical and natural boundaries of the 3-ink boundary processes. This means that the color gamut of an n-ink process is the union of the color gamuts of all its 3-ink boundary processes. As the color gamut of an n-

ink process is the union of the color gamuts of its 3-ink boundary processes, a color gamut descriptor for 3 colorant has to be presented. For a 3-ink process, only two kinds of boundary surfaces have to be taken into account, i.e. the physical and natural colorant boundaries. If a gamut descriptor consisting of a set of contours is used, for example the cross sections of the color gamut with equiluminance planes, only a method of the intersection with the natural planes has to be presented. However, development or exploitation of the color gamut of an n-ink process are not related to determining for the defined discrete colour points, different subsets of colorants and associated coverage fractions thereof.

For reasons similar to those presented relative to claim 1, Applicant submits that Mahy does not disclose the different subsets of colorants and associated coverage fractions thereof recited in independent claims 14 and 18.

Applicant has considered the remaining references and submits these references do not cure the deficiencies of Mahy. As none of the cited art, individually or in combination, discloses or suggests at least the above-noted features of independent claims 1, 14 and 18, Applicant submits the inventions defined by claims 1, 14 and 18, and all claims depending therefrom, are not rendered obvious by the asserted references for at least the reasons stated above.²

Turning now to dependent claim 2, Applicant submits that Mahy uses the cited c1, c2 and c3 parameters as dot percentages, not as color indications. A dot percentage may be considered equivalent to a coverage fraction. Mahy discloses how the boundary of a gamut can be constructed, but does not disclose or suggest composing a color point with various colorants. Thus, Mahy does not disclose or suggest a halftone screen associated to a colorant in a subset

² MPEP § 2142 "...the prior art reference (or references when combined) must teach or suggest **all** the claim limitations.

rendering a first colour point is associated to the same said colorant, if present, in a subset rendering a neighboring colour point of said first colour point. Therefore, claim 2 patentably defines over the applied references for independent reasons.

Turning now to dependent claims 4-8, the image graininess processing of Ito is not related to a graininess calculated for a discrete colour point. That is, one skilled in the art of rendering colors in a printing system would not consider the image processing technologies of Ito when addressing issues of graininess.

In KSR v. Teleflex (127 S. Ct. 1727, 1740 (2007)), the Court noted that

“[u]nder the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” The Court also noted that “a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.”

However, the Court went on to note that

“rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some *rational* underpinning to support the legal conclusion of obviousness.”

Here, however, the Official Action fails to provide a rational reason, due to either a misunderstanding of the invention/references or hindsight reasoning, for replacing or augmenting the gamut boundary calculations of Mahy with the image processing features of Ito. Thus, Applicant requests that the present rejection of claims 4-8 under 35 U.S.C. § 103(a) be withdrawn.

Turning now to dependent claims 3 and 17, Applicant submits that the threshold of Ebner is used to reduce the amount of toner in an area to prevent a "tenting effect." However, the threshold of claims 3 and 17 allows a transition between two color points in which a common halftone screen is attributed to different colorants. This transition is allowed only when the coverage of each of the colorants is below threshold. Thus, the combination of Mahy and Ebner does not disclose or suggest "a list of colorant subsets is consistent with respect to the attribution of a halftone screen to a colorant within a subset over said portion of the colour space if the coverage fractions of the first and second colorants are each less than a threshold coverage fraction." Furthermore, the Official Action again fails to provide a rational reason, due to either a misunderstanding of the invention/references or hindsight reasoning, for replacing or augmenting the gamut boundary calculations of Mahy with the tenting prevention threshold of Ebner. Thus, Applicant requests that the present rejection of claims 3 and 17 under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

In view of the above amendment, Applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Michael E. Monaco (Reg. No. 52,041) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

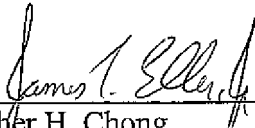
Application No. 10/633,656
Amendment dated October 30, 2008
Reply to Office Action of July 30, 2008

Docket No.: 0142-0420P

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

By  #39,538
Esther H. Chong
Registration No.: 40,953
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant